Planning Resource for Grade 2/3

Continuum of Mathematics Expectations

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NUMBER SENSE AND NUMERATION

1. Quantity Relationships

Grade 2	Grade 3
Overall Expectation	
- read, represent, compare, and order whole numbers to 100, and use concrete materials to represent fractions and money amounts to 100¢	- read, represent, compare, and order whole numbers to 1000, and use concrete materials to represent fractions and money amounts to $10
Specific Expectations	
- represent, compare, and order whole numbers to 100, including money amounts to 100¢, using a variety of tools	- represent, compare, and order whole numbers to 1000, using a variety of tools
	- identify and represent the value of a digit in a number according to its position in the number
	- represent and explain, using concrete materials, the relationship among the numbers 1, 10, 100, and 1000
	- solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 1000
- read and print in words whole numbers to twenty, using meaningful contexts	- read and print in words whole numbers to one hundred, using meaningful contexts
- determine, using concrete materials, the ten that is nearest to a given two-digit number, and justify the answer	- round two-digit numbers to the nearest ten, in problems arising from real-life situations
	- represent and describe the relationships between coins and bills up to $10
- estimate, count, and represent (using the ¢ symbol) the value of a collection of coins with a maximum value of one dollar	- estimate, count, and represent (using the $ symbol) the value of a collection of coins and bills with a maximum value of $10
- compose and decompose two-digit numbers in a variety of ways, using concrete materials	- compose and decompose three-digit numbers into hundreds, tens, and ones in a variety of ways, using concrete materials
- determine, through investigation using concrete materials, the relationship between the number of fractional parts of a whole and the size of the fractional parts	- divide whole objects and sets of objects into equal parts, and identify the parts using fractional names, without using numbers in standard fractional notation
- regroup fractional parts into wholes, using concrete materials	
- compare fractions using concrete materials, without using standard fractional notation	

2. Counting

Grade 2	Grade 3
Overall Expectation	
- demonstrate an understanding of magnitude by counting forward to 200 and backwards from 50, using multiples of various numbers as starting points	- demonstrate an understanding of magnitude by counting forward and backwards by various numbers and from various starting points
Specific Expectations	
- count forward by 1's, 2's, 5's, 10's, and 25's to 200, using number lines and hundreds charts, starting from multiples of 1, 2, 5, and 10	- count forward by 1's, 2's, 5's, 10's, and 100's to 1000 from various starting points, and by 25's to 1000 starting from multiples of 25, using a variety of tools and strategies
- count backwards by 1's from 50 and any number less than 50, and count backwards by 10's from 100 and any number less than 100, using number lines and hundreds charts	- count backwards by 2's, 5's, and 10's from 100 using multiples of 2, 5, and 10 as starting points, and count backwards by 100's from 1000 and any number less than 1000, using a variety of tools and strategies
- locate whole numbers to 100 on a number line and on a partial number line	

3. Operational Sense

Grade 2	Grade 3
Overall Expectation	
- solve problems involving the addition and subtraction of one- and two-digit whole numbers, using a variety of strategies, and investigate multiplication and division	- solve problems involving the addition and subtraction of single- and multi-digit whole numbers, using a variety of strategies, and demonstrate an understanding of multiplication and division
Specific Expectations	
- describe relationships between quantities by using whole-number addition and subtraction	- use estimation when solving problems involving addition and subtraction, to help judge the reasonableness of a solution
- solve problems involving the addition and subtraction of whole numbers to 18, using a variety of mental strategies	- solve problems involving the addition and subtraction of two-digit numbers, using a variety of mental strategies
- solve problems involving the addition and subtraction of two-digit numbers, with and without regrouping, using concrete materials, student-generated algorithms, and standard algorithms	- add and subtract three-digit numbers, using concrete materials, student-generated algorithms, and standard algorithms
– add and subtract money amounts to 100¢, using a variety of tools and strategies	- add and subtract money amounts, using a variety of tools, to make simulated purchases and change for amounts up to $10
- represent and explain, through investigation using concrete materials and drawings, multiplication as the combining of equal groups	- relate multiplication of one-digit numbers and division by one-digit divisors to real life situations, using a variety of tools and strategies
- represent and explain, through investigation using concrete materials and drawings, division as the sharing of a quantity equally	- multiply to 7 x 7 and divide to 49 ÷ 7, using a variety of mental strategies

MEASUREMENT

1. Attributes, Units, and Measurement Sense

Grade 2	Grade 3
Overall Expectation	
- Estimate, measure, and record length, perimeter, area, mass, capacity, time, and temperature, using non-standard units and standard units	- Estimate, measure, and record length, perimeter, area, mass, capacity, time, and temperature, using standard units
Specific Expectations	
- Choose benchmarks – in this case, personal referents – for a centimetre and a metre to help them perform measurement tasks	
- Estimate and measure length, height, and distance, using standard units (i.e., centimetre, metre) and non-standard units	- Estimate, measure, and record length, height, and distance, using standard units (i.e., centimetre, metre, kilometre)
- Record and represent measurements of length, height, and distance in a variety of ways	
- Select and justify the choice of a standard unit (i.e., centimetre or metre) or a nonstandard unit to measure length	
	- Draw items using a ruler, given specific lengths in centimetres
- Estimate, measure, and record the distance around objects, using non-standard units	- Estimate, measure, and record the perimeter of two-dimensional shapes, through investigation using standard units
- Estimate, measure, and record area, through investigation using a variety of non-standard units	- Estimate, measure (i.e., using centimeter grid paper, arrays), and record area
- Estimate, measure, and record the capacity and/or mass of an object, using a variety of non-standard units	- Choose benchmarks for a kilogram and a litre to help them perform measurement tasks
	- Estimate, measure, and record the mass of objects using the standard unit of the kilogram or parts of a kilogram
	- Estimate, measure, and record the capacity of containers, using the standard unit of the litre or parts of a litre
- Tell and write time to the quarter-hour, using demonstration digital and analogue clocks	- Read time using analogue clocks, to the nearest five minutes, and using digital clocks and represent time in 12-hour notation
- Construct tools for measuring time intervals in non-standard units	
- Use a standard thermometer to determine whether temperature is rising or falling	- Estimate, read (i.e., using a thermometer), and record positive temperatures to the nearest degree Celsius (i.e., using a number line; using appropriate notation)
- Describe how changes in temperature affect everyday experiences	- Identify benchmarks for freezing, cold, cool, warm, hot, and boiling temperatures as they relate to water and for cold, cool, warm, and hot temperatures as they relate to air

2. Measurement Relationships

Grade 2	Grade 3
Overall Expectation	
- Compare, describe, and order objects, using attributes measured in non-standard units and standard units	- Compare, describe, and order objects, using attributes measured in standard units
Specific Expectations	
	- Compare standard units of length (i.e., centimetre, metre, kilometre) and select and justify the most appropriate standard unit to measure length
	- Compare and order objects on the basis of linear measurements in centimetres and/or metres in problem-solving contexts
	- Compare and order various shapes by area, using congruent shapes and grid paper for measuring
- Describe, through investigation, the relationship between the size of a unit of area and the number of units needed to cover a surface	- Describe, through investigation using grid paper, the relationship between the size of a unit of area and the number of units needed to cover a surface
- Compare and order a collection of objects by mass and/or capacity, using non-standard units	- Compare and order a collection of objects, using standard units of mass (i.e., kilogram) and/or capacity (i.e., litre)
- Determine, through investigation, the relationship between days and weeks and between months and years	- Solve problems involving the relationships between minutes and hours, hours and days, days and weeks, and weeks and years, using a variety of tools

GEOMETRY AND SPATIAL SENSE

1. Geometric Properties

Grade 2	Grade 3
Overall Expectation	
- Identify two-dimensional shapes and three-dimensional figures and sort and classify them by their geometric properties	- Compare two-dimensional shapes and three-dimensional figures and sort them by their geometric properties
Specific Expectations	
– Distinguish between the attributes of an object that are geometric properties and the attributes that are not geometric properties, using a variety of tools	
– Locate the line of symmetry in a two-dimensional shape	
– Identify and describe various polygons (i.e., triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons) and sort and classify them by their geometric properties (i.e., number of sides or number of vertices), using concrete materials and pictorial representations	- Identify and compare various polygons (i.e., triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons) and sort them by their geometric properties (i.e., number of sides; side lengths; number of interior angles; number of right angles)
– Identify and describe various three-dimensional figures (i.e., cubes, prisms, pyramids) and sort and classify them by their geometric properties (i.e., number and shape of faces), using concrete materials	
– Create models and skeletons of prisms and pyramids, using concrete, and describe their geometric properties (i.e., number and shape of faces, number of edges)	– Construct rectangular prisms, and describe geometric properties (i.e., number and shape of faces, number of edges, number of vertices) of the prisms
	– Compare and sort prisms and pyramids by geometric properties (i.e., number and shape of faces, number of edges, number of vertices), using concrete materials
	– Use a reference tool to identify right angles and to describe angles as greater than, equal to, or less than a right angle
	– Compare various angles, using concrete materials and pictorial representations, and describe angles as bigger than, smaller than, or about the same as other angles

2. Geometric Relationships

Grade 2	Grade 3
Overall Expectation	
- Compose and decompose two-dimensional shapes and three-dimensional figures	- Describe relationships between two-dimensional shapes, and between two-dimensional shapes and three-dimensional figures
Specific Expectations	
– Cover an outline puzzle with two-dimensional shapes in more than one way	– Solve problems requiring the greatest or least number of two-dimensional shapes needed to compose a larger shape in a variety of ways
– Compose and describe pictures, designs, and patterns by combining two-dimensional shapes	
– Compose and decompose two-dimensional shapes	– Identify congruent two-dimensional shapes by manipulating and matching concrete materials
	– Explain the relationships between different types of quadrilaterals
– Build a structure using three-dimensional figures, and describe the two-dimensional shapes and three-dimensional figures in the structure	– Identify and describe the two-dimensional shapes that can be found in a three dimensional figure
	– Describe and name prisms and pyramids by the shape of their base

3. Location and Movement

Grade 2	Grade 3
Overall Expectation	
- Describe and represent the relative locations of objects, and represent objects on a map	- Identify and describe the locations and movements of shapes and objects
Specific Expectations	
– Describe the relative locations and the movements of objects on a map	– Describe movement from one location to another using a grid map
– Draw simple maps of familiar settings, and describe the relative locations of objects on the maps	– Identify flips, slides, and turns, through investigation using concrete materials and physical motion, and name flips, slides, and turns as reflections, translations, and rotations
– Create and describe symmetrical designs using a variety of tools	– Complete and describe designs and pictures of images that have a vertical, horizontal, or diagonal line of symmetry

PATTERNING & ALGEBRA

1. Patterns and Relationships

Grade 2	Grade 3
Overall Expectation	
- identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns	- describe, extend, and create a variety of numeric patterns and geometric patterns
Specific Expectations	
– create a repeating pattern by combining two attributes	- identify, extend, and create a repeating pattern involving two attributes, using a variety of tools
- demonstrate, through investigation, an understanding that a pattern results from repeating an operation or making a repeated change to an attribute	- demonstrate, through investigation, an understanding that a pattern results from repeating an action, repeating an operation, using a transformation, or making some other repeated change to an attribute
– represent a given growing or shrinking pattern in a variety of ways	- create a number pattern involving addition or subtraction, given a pattern represented on a number line or a pattern rule expressed in words
- identify and describe, through investigation, growing patterns and shrinking patterns generated by the repeated addition or subtraction of 1's, 2's, 5's, 10's, and 25's on a number line and on a hundreds chart	- identify and describe, through investigation, number patterns involving addition, subtraction, and multiplication, represented on a number line, on a calendar, and on a hundreds chart
– identify, describe, and create, through investigation, growing patterns and shrinking patterns involving addition and subtraction, with and without the use of calculators	
– create growing or shrinking patterns	- extend repeating, growing, and shrinking number patterns
– identify repeating, growing, and shrinking patterns found in real-life contexts	
	- represent simple geometric patterns using a number sequence, a number line, or a bar graph

2. Expressions and Equality

Grade 2	Grade 3
Overall Expectation	
- demonstrate an understanding of the concept of equality between pairs of expressions, using concrete materials, symbols, and addition and subtraction to 18	- demonstrate an understanding of equality between pairs of expressions, using addition and subtraction of one- and two-digit numbers
Specific Expectations	
- demonstrate an understanding of the concept of equality by partitioning whole numbers to 18 in a variety of ways, using concrete materials	
– represent, through investigation with concrete materials and pictures, two number expressions that are equal, using the equal sign	- determine, through investigation, the inverse relationship between addition and subtraction
– identify, through investigation, and use the commutative property of addition to facilitate computation with whole numbers	- identify, through investigation, and use the associative property of addition to facilitate computation with whole numbers
– identify, through investigation, the properties of zero in addition and subtraction (i.e., when you add zero to a number, the number does not change; when you subtract zero from a number, the number does not change)	- identify, through investigation, the properties of zero and one in multiplication (i.e., any number multiplied by zero equals zero; any number multiplied by 1 equals the original number)
– determine the missing number in equations involving addition and subtraction to 18, using a variety of tools and strategies	- determine, the missing number in equations involving addition and subtraction of one- and two-digit numbers, using a variety of tools and strategies

DATA MANAGEMENT & PROBABILITY

1. Collection and Organization of Data

Grade 2	Grade 3
Overall Expectation	
- collect and organize categorical or discrete primary data and display the data, using tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, with labels ordered appropriately along horizontal axes, as needed	- collect and organize categorical or discrete primary data and display the data using charts and graphs, including vertical and horizontal bar graphs, with labels ordered appropriately along horizontal axes, as needed
Specific Expectations	
- demonstrate an ability to organize objects into categories, by sorting and classifying objects using two attributes simultaneously	– demonstrate an ability to organize objects into categories, by sorting and classifying objects using two or more attributes simultaneously
- gather data to answer a question, using a simple survey with a limited number of responses	– collect data by conducting a simple survey about themselves, their environment, issues in their school or community, or content from another subject;
- collect and organize primary data that is categorical or discrete (i.e., that can be counted, such as the number of students absent), and display the data using one-to-one correspondence in concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, with appropriate titles and labels and with labels ordered appropriately along horizontal axes, as needed	– collect and organize categorical or discrete primary data and display the data in charts, tables, and graphs (including vertical and horizontal bar graphs), with appropriate titles and labels and with labels ordered appropriately along horizontal axes, as needed, using many-to-one correspondence

2. Data Relationships

Grade 2	Grade 3
Overall Expectation	
- read and describe primary data presented in tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers	- read, describe, and interpret primary data presented in charts and graphs, including vertical and horizontal bar graphs
Specific Expectations	
- read primary data presented in concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, and describe the data using mathematical language	– read primary data presented in charts, tables, and graphs (including vertical and horizontal bar graphs), then describe the data using comparative language, and describe the shape of the data
- pose and answer questions about class generated data in concrete graphs, pictographs, line plots, simple bar graphs, and tally charts	- interpret and draw conclusions from data presented in charts, tables, and graphs
- demonstrate an understanding of data displayed in a graph, by comparing different parts of the data and by making statements about the data as a whole	
- distinguish between numbers that represent data values and numbers that represent the frequency of an event	– demonstrate an understanding of mode, and identify the mode in a set of data.

3. Probability

Grade 2	Grade 3
Overall Expectation	
- describe probability in everyday situations and simple games	- predict and investigate the frequency of a specific outcome in a simple probability experiment
Specific Expectations	
- describe probability as a measure of the likelihood that an event will occur, using mathematical language (i.e., impossible, unlikely, less likely, equally likely, more likely, certain)	
- describe the probability that an event will occur through investigation with simple games and probability experiments and using mathematical language	– predict the frequency of an outcome in a simple probability experiment or game, then perform the experiment, and compare the results with the predictions, using mathematical language
	- demonstrate, through investigation, an understanding of fairness in a game and relate this to the occurrence of equally likely outcomes